

**REMARKS**

Claims 1, 2, 4 and 6-10 are pending in this application. By this Amendment, the Abstract is amended, claims 3 and 5 are cancelled without prejudice to or disclaimer of the subject matter contained therein, and the specification and claims 1, 2, 4 and 6-9 are amended. Claim 2 is rewritten into independent format. No new matter is added by any of these amendments.

Reconsideration based on the following remarks is respectfully requested.

**I. The Drawings Satisfy All Formal Requirements**

The Office Action raises concerns regarding the drawings. The drawings have been checked as requested, and formal drawings will be filed upon Allowance.

**II. The Specification Satisfies All Formal Requirements**

The Office Action objects to the specification based on informalities. The specification has been amended to obviate the objection. Withdrawal of the objection to the specification is respectfully requested.

**III. The Claims Satisfy the Requirements under 35 U.S.C. §112, second paragraph**

The Office Action rejects claims 1-10 under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 1 and 2 have been amended to obviate this rejection in view of the Examiner's helpful comments. Withdrawal of the rejection under 35 U.S.C. §112, second paragraph is respectfully requested.

**IV. Claims 1, 2, 4 and 6-10 Define Patentable Subject Matter**

The Office Action rejects claims 1-3, 5, 7, 9 and 10 under 35 U.S.C. §102(b) over U.S. Patent 5,857,140 to Foster. The Office Action further rejects claims 1-3, 5, 7, 9 and 10 under 35 U.S.C. §102(b) over Japanese Patent Application 07-232082 to Houdaira *et al.* (hereinafter "Houdaira"). These rejections are rendered moot with respect to claims 3 and 5, and are respectfully traversed with respect to the remaining claims.

Neither Foster nor Houdaira teaches or suggests an exhaust emission control system of an internal combustion engine, including an internal combustion engine, and an exhaust gas purifying catalyst provided in an exhaust passageway of the internal combustion engine, the emission control system further including a box body formed with an exhaust gas inlet and an exhaust gas outlet, a catalyst support incorporated into the box body, and a catalyst substance supported on the catalyst support, wherein a part of the catalyst support of the exhaust gas purifying catalyst is a low resistance area formed so that a gas flow resistance is lower than in other areas and disposed in such a position that a flow velocity of the exhaust gas flowing to the catalyst support is high, the low resistance area is an area in which the gas flow resistance is set low by forming a notched portion in the catalyst support, and the notched portion is formed in a part of an exhaust gas inflow sided end surface of the catalyst support, as recited in claim 1.

Also, Foster and Houdaira each fail to teach or suggest an exhaust emission control system of an internal combustion engine, including an internal combustion engine, and an exhaust gas purifying catalyst provided in an exhaust passageway of the internal combustion engine, the emission control system further including a box body formed with an exhaust gas inlet and an exhaust gas outlet, a catalyst support incorporated into the box body, and a catalyst substance supported on the catalyst support, wherein a part of the catalyst support of the exhaust gas purifying catalyst is a low resistance area formed so that a gas flow resistance is lower than in other areas and disposed in such a position that a flow velocity of the exhaust gas flowing to the catalyst support is high, the low resistance area is an area in which the gas flow resistance is set low by forming a notched portion in the catalyst support, and the notched portion is formed in a part of an exhaust gas outflow sided end surface of the catalyst support, as recited in claim 2.

Instead, Foster discloses a catalytic converter 10 having an oval cross-section shaped by a housing 12 and terminating at edges 14. In particular, Foster teaches a cavity in the housing 12 to enclose a ceramic substrate 18 that is coated with a high surface area material. The coating is catalyzed with a precious metal to purify the exhaust gases entering from the inlet face 20 and exiting the outlet face 22. The substrate 18 includes depressions at these faces. The substrate 18 is supported by a mat 24 in the form of a thermally expandable sleeve (col. 4, lines 24-64 and Figs. 1-3 of Foster).

Applicant respectfully asserts that the notched portion provided in the part of the exhaust gas inflow sided end surface of the catalyst support, or alternatively the part of the exhaust gas outflow sided end surface of the exhaust catalyst support facilitates the exhaust gas to be directed with reduced pressure losses into the low resistance area. That is, a flow velocity of the exhaust gas passing through the low resistance area can be increased for the amount sacrificing the flow velocity of the exhaust gas in the portions other than the low resistance area.

Thus, the notched portion is provided in the part of the exhaust gas inflow sided end surface or else the part of the exhaust gas outflow sided end surface of the exhaust catalyst support. The augmented flow through the low resistance area, as a result of the notched portion, produces a heat spot formed in the catalyst support. The heat spot enables the temperature of the catalyst support to increase, thus improving performance of the catalyst. For exemplary embodiments, these features are described in the present disclosure at page 14, line 7 through page 16, line 2.

Regarding a shape of the notched portion, considering Figs. 1, 6 and 18 of Foster, the shape of the notched portion shown in Fig. 5 (large conical shape) of Applicant's specification appears to be slightly similar, but there is nothing shown that is similar to Applicant's shapes shown in Fig. 4 (annular shape) and Fig. 6 (small conical shape).

This is because Foster discloses a configuration in which the recessed inlet 48 is provided in the catalyst substrate 46 (col. 6, lines 14-28 and Figs. 1, 6 and 18 of Foster). The effect from the design of Foster prevents the exhaust gas from flowing directly into the mat 24 to improve its durability. In contrast, Applicant's claimed features are directed to decreasing the exhaust gas quantity flowing in other than the low resistance area so as to increase the flow velocity of the exhaust gas flowing in the low resistance area. Thus, a heat spot is formed from the flow through the low resistance area, which is completely lacking in Foster.

Further, Houdaira discloses a catalyst converter 1 having first and second carriers 10, 20. In particular, Houdaira teaches an end face 21 showing a cylindrical recess region 12 (Abstract and drawing 1 of Houdaira).

Houdaira teaches only an upstream side of an end surface of a second carrier 20, which is rapidly exposed to the exhaust gas from the first carrier 10, so as to improve the activation of the catalyst. However, Houdaira lacks any corresponding configuration to the notched portion, as provided in Applicant's claimed features. Nor does Houdaira provide for a low resistance area, as provided in Applicant's claimed features. Instead, in order to communicate between inlet 30 to outlet 31, Houdaira requires the gas to flow through the first carrier 10.

A claim must be literally disclosed for a proper rejection under §102. This requirement is satisfied "only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." See MPEP §2131. Applicant respectfully submits that the Office Action does not satisfy this burden with either Foster or Houdaira.

The Office Action further rejects claims 4, 6 and 8 under 35 U.S.C. §103(a) over Foster. The Office Action further rejects claims 4-10 under 35 U.S.C. §103(a) over Houdaira

in view of Foster. These rejections are rendered moot with respect to claim 5, and are respectfully traversed with respect to the remaining claims.

As explained above, Foster does not teach the features for claims 1 and 2 from which claims 4, 6 and 8 depend. There is no motivation to modify features of Foster, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicant's claimed features.

Houdaira does not compensate for the deficiencies of Foster outlined above for claims 1 and 2. Nor does Houdaira teach, disclose or suggest the additional features recited in claims 4 and 6-10. Instead, Houdaira discloses a catalyst converter 1 having first and second carriers 10, 20. In particular, Houdaira teaches an end face 21 showing a cylindrical recess region 12 (Abstract and drawing 1 of Houdaira).

Houdaira teaches only an upstream side of an end surface of a second carrier 20, which rapidly exposed to the exhaust gas from the first carrier 10, so as to improve the activation of the catalyst. However, Houdaira lacks any corresponding configuration to the notched portion, as provided in Applicant's claimed features. Thus, one of ordinary skill in the art would not be motivated to achieve the advantages derived from Applicant's claims to decrease the exhaust gas quantity flowing in other than the low resistance area so as to increase the flow velocity of the exhaust gas flowing in the low resistance area, enabling a heat spot to be formed.

Thus, one of ordinary skill in the art would not be motivated to achieve the advantages derived from Applicant's claims to decrease the exhaust gas quantity flowing in other than the low resistance area so as to increase the flow velocity of the exhaust gas flowing in the low resistance area, enabling a heat spot to be formed.

Further, there is no motivation to combine features related to pair of catalysts of Houdaira with coated substrate of Foster, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicant's claimed features.

A *prima facie* case of obviousness for a §103 rejection requires satisfaction of three basic criteria: there must be some suggestion or motivation either in the references or knowledge generally available to modify the references or combine reference teachings, a reasonable expectation of success, and the references must teach or suggest all the claim limitations. See MPEP §706.02(j). Applicant respectfully submits that the Office Action fails to satisfy these requirements with Foster and Houdaira.

For at least these reasons, Applicant respectfully asserts that the independent claims are now patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed as well as for the additional features they recite. Consequently, all the claims are in condition for allowance. Thus, Applicant respectfully requests that the rejections under 35 U.S.C. §§102 and 103 be withdrawn.

**V. Conclusion**

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,



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Attachment:  
Abstract

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